A Water Review Quarterly

RECLAMATION

era

Summer 1975

THE NATIONAL CONFERENCE ON WATER

RECLAMATION

era

Summer 1975

Vol. 61 No. 2

Editor
Kathy Wood Loveless

Letters to the editor should be addressed to: Editor, *Reclamation Era*, Code 147, U.S. Bureau of Reclamation, 18th and C Sts. N.W. Washington, D.C. 20240.

United States Department of the Interior
Stanley K. Hathaway, Secretary
United States Bureau of Reclamation
Gilbert G. Stamm, Commissioner

Contents

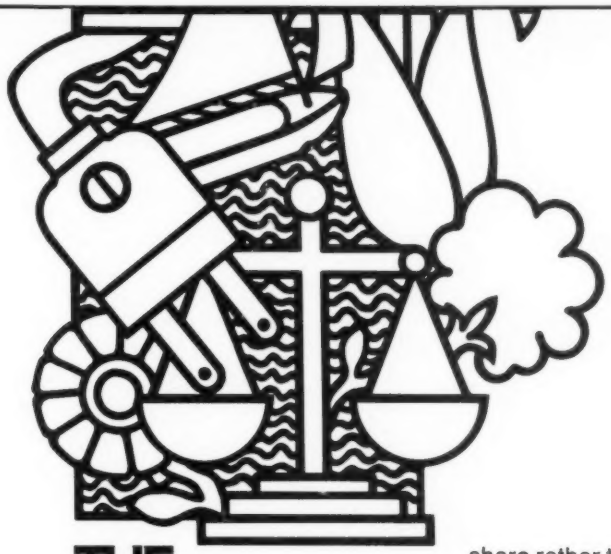
The National Conference on Water 1
Water and Energy 5
Water and Food and Fiber 7
Water and the Environment and Outdoor Recreation 10
Water Laws, Water Rights, and Institutional Arrangements 14
The Role of Federal, State, and Local Governments 17
Water Quiz 19
How Page Grew 20
by Carol White
E&R Center Helps Denver Paddle Its Canoe 26
by Jim Joslyn
News Notes 31
Letters to the Editor **inside cover**

Cover

The long-awaited National Conference on Water was held in Washington, D.C. in April, 1975. See lead article for summaries of proceedings.

Issued quarterly by the Bureau of Reclamation, United States Department of the Interior, Washington, D.C. 20240. Use of funds for printing this publication approved by the Director, Office of Management and Budget, February 3, 1975.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: $1.05, single copy; $4.00, subscription/per year ($1.00 additional for foreign mailing).



THE NATIONAL CONFERENCE ON WATER

Although opinions varied widely on how the U.S. should manage its water supply, experts who gathered in Washington during the last week in April for the National Conference on Water could all agree on one simple conclusion—the Nation can no longer be complacent about its most basic natural resource.

Sponsored by the Water Resources Council, the long-awaited national summit on water had two primary objectives: (1) to examine the role of water in national affairs through 1985, and (2) to consider the adequacy of existing and proposed policies and programs in fulfilling this role. Participants representing Congress, Federal agencies, State and local governments, various user groups, environmental groups and the general public were provided an open forum to discuss and exchange views on key water issues of national importance.

Setting the tone of the conference was a printed message from President Gerald R. Ford, who called the subject of water problems a matter "of great public concern."

"Water, even more than food, is basic to our survival," President Ford said. "I therefore think that, as we approach the celebration of our national bicentennial, it is only appropriate to reflect on the immense role which water has played in our country's growth and development.

"There are, I realize, very different points of view represented in this audience as to what constitutes the best approach to the burning question of use, purity, and availability of our nation's water supply in the next decade. I have great faith that in your discussions you will all keep in mind the goals you share rather than the different approaches you favor, and that from this Conference there will come a useful sense of what should and must be done for the good of all our citizens," the President said.

The first day of the conference featured a plenary session with a keynote address by Rogers C. B. Morton, Chairman of the Water Resources Council and former Secretary of the Interior, plus speeches by Secretary of the Army Howard H. Callaway, Secretary of Agriculture Earl L. Butz, and Russell W. Peterson, Chairman of the Council on Environmental Quality.

The second day was devoted to individual sessions of the eight panels set up to discuss:

1. Water and Energy
2. Water and Food and Fiber
3. Water and Transportation and Commerce
4. Water and Municipalities and Industry
5. Water and the Environment and Outdoor Recreation
6. Flood Damage Reduction
7. Water Laws, Water Rights, and Institutional Arrangements
8. The Role of Federal, State, and Local Governments.

Reports from the panels were heard during another plenary session before the conference summation and adjournment. Summaries of the committee reports most applicable to Reclamation are presented later in this article.

Commissioner of Reclamation Gilbert G. Stamm served as a discussant on the panel for Water and Food and Fiber. A summary of the Commissioner's remarks follows:

"I've listened with a great deal of interest to the telling arguments put forth by the panelists and the respondents on the program. I've heard people talk about the growing, diverse, and seemingly conflicting requirements being placed on our present limited water resources.

"What I have heard, plus a lifetime of experience in the development and the management of water resources to meet the multiple needs and desires of society, lead me to two conclusions.

"First, significant areas of the United States today do face the prospect of devastating water problems within the next 15 to 25 years. And, second, such a crisis can be averted if we take appropriate action now to do so.

"Significant areas of the United States today do face the prospect of devastating water problems within the next 15 to 25 years."

"Such a crisis can be averted if we take appropriate action now to do so."

"One of the great disadvantages in water resource development is that it takes 20 to 25 years in many cases—in some cases even longer—to transfer an idea into reality. Therefore, we cannot wait until a crisis hits us before we start to take remedial action. During the conference today, the various aspects of water problems are being discussed. They're being discussed separately, but they cannot be solved separately. The facilities to provide more water for food and fiber, cannot be planned, constructed, and operated without taking into consideration the need to provide more water for energy, for municipalities, for industry; to protect the environment; and to provide more outdoor recreation. In addition, the need for flood control, navigation, water quality, water law revisions, and water rights settlements—all must be considered.

"In other words, the solution to our water problem must take into consideration all sources of water—and by all sources I mean ground water, surface water, atmospheric water, geothermal brines, seawater—and all functions to which water can be put for the benefits of people.

"Accomplishing our objectives requires planning. I'm sorry to say we have had planning funds reduced significantly in certain areas in recent years at the

Man has moved to the arid and semi-arid West where streamflows are meager and erratic.

". . . There are those who are inclined to condemn that which is not natural or that which has gone before. They should remember that in the beginning man was given dominion over this earth. From the beginning, he picked fruit (at least *she* did, almost from the beginning). And he killed animals, built fires, built shelters, used water for bathing and drinking, and he cultivated the ground. He carried water to his crops during dry spells.

"But he couldn't take a bath or a drink of water then—or smoke a cigarette now—without

very time they should have been increased. The same goes for research. If we're going to put our innovativeness to work, we should be increasing, not diminishing, funds for research.

"Public involvement, I mean real public involvement, with full and open communication among all aspects of our society, is vital to our programs. Whatever we do must be for the benefit of people. That means people today as well as people tomorrow, and tomorrow's tomorrow, and on ad infinitum. If any program is not for the benefit of people, it just simply has no justification."

"Public involvement, I mean real public involvement, with full and open communication among all aspects of our society, is vital to our programs."

Gilbert G. Stamm, Commissioner of Reclamation.

polluting the environment. Man has modified his environment and polluted it from the beginning. Also, he's been fruitful and multiplied. In so doing he has moved into areas where the rainfall is slight. In great numbers man has moved to the arid and semi-arid West where streamflows are meager and erratic. The only way those meager and erratic streamflows can meet the needs of man is through regulation and management.

"But in meeting his needs, man must not be allowed to exploit nature for selfish gains or personal whims. As our numbers and our needs grow (and they will continue to do so), our activities must become more regulated to recognize the rights of others now living, as well as those generations unborn. Man's activities are regulated in little ways and big ways.

"Among the little ways, we put signs in buses and airplanes that indicate no smoking areas. Among the big ways, we passed a National Environmental Policy Act.

"Regulation is needed particularly in the field of water resources development, because those resources must be developed without jeopardizing the obligations of each generation to protect and preserve the capacity of our renewable resources to serve future generations. Society cannot condone a policy or practice of exploitation; neither can it condone one of total preservation. Common ground must be sought and found, and all interests should participate in that effort."

"... Do we need a national policy? Everybody has said yes and I agree.

"Even without a national policy the Nation's water program has certainly not been static. It has been an evolutionary program. Today the authorities and responsibilities of the water agencies are a far cry from what prevailed 50 years ago. Flexibility and change are essential to survival, and any agency—or any government—that is unwilling to recognize the need for flexibility to meet changing situations cannot long survive. Programs must be flexible. They've got to be because needs, ideas, thoughts, and requirements change. Flexibility must be built into our national policy.

"I can't conceive of any single program that can fit the varying needs of all of the various regions of this great country. The national policy has to recognize the differing needs of the different areas. We need a policy that is rigid enough to meet the needs of today and protect the resources of tomorrow, flexible enough to recognize regional differences and national objectives. There is a wide variety of national objectives, such as population distribution, national security, food production, recreation, flood control, fish and wildlife enhancement, energy generation, fossil fuel resource development, balance of trade, humanitarian obligations. Those objectives are not incompatible. To a large extent they can be compatible. There are times they are in competition, but they all need to be taken into account in a balanced sense.

"In order to meet all the needs of all of the people, we must develop a policy aimed at water management. No one function should be given exclusive priority, although emphasis can and should be shifted from time to time to meet short-term objectives so long as long-term objectives are not irreparably jeopardized.

"For example, the use of water for energy development does not mean that water is lost forever to agriculture. There are those who say it's got to be either/or. Either you use the water for energy and lose its use for agriculture, or you use it for agriculture and lose its use for energy. To me that's not true at all.

"In discussing a total water management program, we're talking of nonstructural means as well. The nonstructural competence for total water management will become refined in the course of time. The structural means which have been or may be needed in connection with a short-term energy program will remain available to meet the longer-range needs. The two together, the structural means and the nonstructural, will lead us toward our objectives of conservation and use for people today, tomorrow, and in the future.

"The national policy should include research into ways of augmenting the natural runoff, through such measures as precipitation management, geothermal extractions, desalting of brackish and sea water, and recycling and reuse of waste water. It should stress conservation of our water supplies through increasing the efficiency of our present and proposed systems. It should recognize the need for greater and more sophisticated controls on the farm, and probably conversion from our traditional methods of irrigation in many areas to sprinklers, drip, bubbler, and other sophisticated methods."

"... Do we need a national policy? Everybody has said yes and I agree."

— Gilbert G. Stamm

"The use of water for energy development does not mean that water is lost forever to agriculture."

Water & Energy

Moderator, Daniel Dreyfus, Deputy Staff Director for Legislation, Committee on Interior and Insular Affairs
Vice Moderator, Jack O. Horton, Assistant Secretary for Land and Water Resources, Department of the Interior

Discussions seemed to indicate a consensus that there is an adequate supply of water to support nearly any energy development that the public chooses to have. The question is not one of insufficient supply; it is one of competition among potential future uses. Nearly all participants agreed that the energy industry can buy water from competitive uses, particularly from agricultural uses.

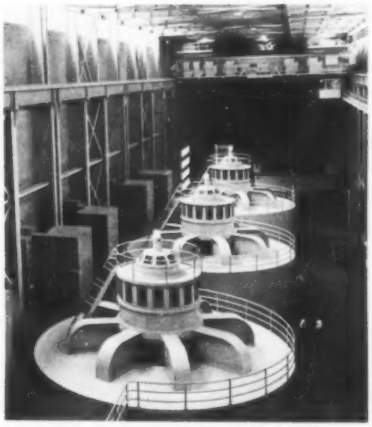
The most significant issue raised involved the appropriate role of government in the allocation of water among uses and users. The major points of view were that either the market place would allocate the water sufficiently well without serious consequences to any of the uses or that it is necessary for government, at some level, to apply allocation criteria and include social considerations in the decisions. It was noted that the energy industry could pay for new sources of water, new storage and conveyance systems, beyond agriculture's ability to pay.

There were differing views over what is the appropriate level of government to make decisions affecting water. The States' role was emphasized by some. Other spokesmen said that many of the choices and decisions should be at the local government level. There was general agreement, however, that the policies and decisions of the Federal Government were too rigid and inflexible and often were obstructive. Decisions at all levels of government were hampered by the Federal rules and decision system.

Several spokesmen advocated the re-examination of particular Federal policies especially the Internal Revenue Service regulations on industrial development bonds involving electric powerplants. The pending Federal legislation on mined land reclamation was also cited as were the Environmental Protection Agency's "zero discharge" rules for thermal powerplant waste waters. The water losses were compared among cooling towers, closed cycles, and "once-through" means to show that the regulations were often producing contradictory effects.

Other views of the participants were that the new economic situation involving energy has made many of the old planning decisions obsolete. Another look should be taken at the hydroelectric power opportunities that were rejected on economic grounds.

"The question is not one of an insufficient supply of water; it is one of competition among potential uses."



Hungry Horse project powerplant.

Other concerns were that there is a very long "lead time" in water decisions and actions. Water users cannot wait until events overtake them before knowing the right course of action to take. They must plan for the unexpected events that could counter plans. Alternatives and flexibility must be their guide in national water planning.

A major effort should be made to reduce waste instead of curtailing beneficial production activities. There are opportunities to avoid wasting heat by arranging industrial complexes and by reducing adverse environmental impacts. The combination of nuclear

powerplants, paper mills, and chemical plants interdependently located would help reduce waste. Some restrictions on the use of energy resources should be relaxed, and production should be increased through innovative means with flexible choices and decisions.

However, panel members felt that they cannot afford to abandon environmental goals and objectives. They are not so expensive as to be omitted in this situation. Water supply is not a problem. Rather, there is a management problem. Institutional arrangements are in disarray particularly in government, both in the Congress and the Executive Branch, and in the various levels of government. This condition leads to indecision. The choice among objectives should not be exclusively or even primarily economic. There must be a sensitivity to environmental impacts and opportunity for thorough public participation.

Several courses of action probably will be pursued within the existing political system without much major change. This is the current procedure and institutional constraints will continue to be accepted and relied upon by both the advocates of developments and by those who oppose them or seek their modification.

For example, Federal subsidies, water right laws, and market forces as well as governmental decisions will be utilized to shape the future of energy development.

The panel recommended innovative planning; the skeptical questioning of existing constraints and rules; the search for technological options, and to the greatest extent possible, more comprehensive planning and open public decisions.

Water, Food & Fiber

Moderator, Clifford Hardin, Vice Chairman of the Board, Ralston Purina, St. Louis

Vice Moderator, Robert Long, Assistant Secretary, Department of Agriculture

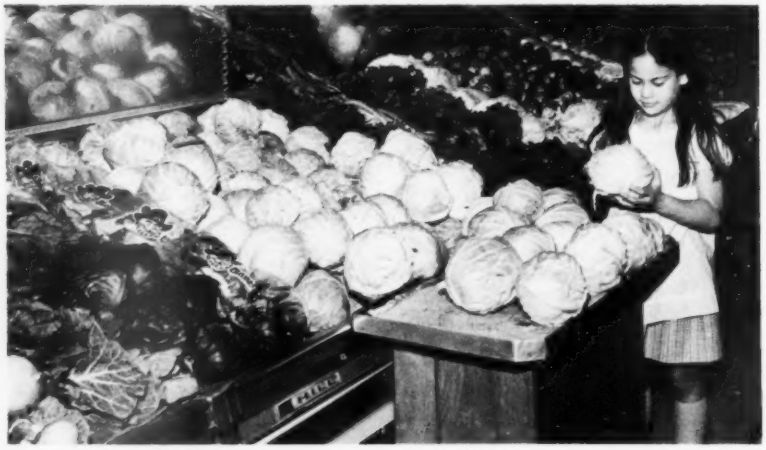
The panel on Water and Food and Fiber proved to be lively and provocative. Discussions ranged from economics to ecology, from food to family planning, from subsidies to starvation and from ruminants to rationales.

While a number of specific questions and suggestions surfaced, the following general observations are offered in summary:

The need to declare a national policy addressing the role of water was expressed numerous times. Such a policy must be flexible enough to consider local situations yet be broad enough to chart a national course of action for effectively guiding Federal and State agency programs. All participants encouraged active public participation and involvement in development and implementation of a national policy.

Adoption of a national policy on water should reflect national goals which specifically address priorities associated with energy production, environmental values, transportation, balance of payments, flood losses, etc.,and their relative solutions as compared to production of food and fiber. No one program area should be given exclusive priority.

Rural America is being called upon to maintain—even increase—agricultural production while providing land for living, recreation, and open space for the expanding urban population.



"As alternative lands are called upon to produce the food and fiber lost to development, numerous unexpected environmental spinoffs occur."

Balancing this competition is a major problem facing communities daily. An estimated one million acres of cropland per year are being taken out of production and committed to other uses. As alternative lands are called upon to produce the food and fiber lost to development, numerous unexpected environmental spinoffs occur. For example, erosion and sedimentation and loss of wildlife habitat increase as the more marginal croplands are brought into production.

An important interrelationship exists between water and land use. Water management problems associated with coastal zone lands are a good example of this interrelationship. The Coastal Zone Management Act was designed to address this type of problem. As States develop their state programs, they are attempting to outline programs which address such interrelationships.

This suggests that water resources policy and land use policy need to be better coordinated.

Other questions posed in this session were, "Is the current level of agricultural production necessary? Are we likely to get the wrong answers if first consideration is given to agricultural needs? Can the level of production experienced in the past 20 years be expected to continue for the next 20? What are our goals for production of food and fiber? Should we manage our forestry resources for full production or some lower level? Should the market place be used as a means to allocate resources?"

Agricultural production was considered with respect to domestic and world needs. There was obvious consensus that domestic needs for food should be met. In considering world needs, the participants felt that commercial production of food would assist us with our balance of trade and would reduce costs to the domestic market.

Opinions varied widely on the issues of cost sharing and discount rates. No consensus was reached.

"In considering world needs, the participants felt that commercial production of food would assist us with our balance of trade and would reduce costs to the domestic market."

There was general consensus, however, that State and local involvement in planning must be increased and that they should have a greater role in decision making.

The questions of regulatory functions under the National Environmental Policy Act (NEPA) and PL 92-500 were addressed with divergent opinions. Such regulations impose constraints that potentially reduce production of food and fiber and were regarded by some as unrealistic and unattainable.

A recurring theme running through a number of the papers and discussions was the need for research, education, and technical assistance. Research needs were cited to increase food and fiber production, to better understand and manage water, and to seek answers on environmental quality impacts. Education was highlighted as a means to create a public awareness and understanding of the role of water. The importance of technical assistance to help put the knowledge into practice was also emphasized.

589-747 O - 75 - 2

Water, Environment & Outdoor Recreation

Moderator, Laurence R. Jahn, Vice President, Wildlife Management Institute, Washington, D.C.

Vice Moderator, Steven D. Jellinek, Staff Director, Council on Environmental Quality

In this session agreement was reached that (1) national economic efficiency and (2) environmental quality should be used as co-equal planning objectives, with economic development to be carried out within the framework of ecological soundness. Top priority should be given to maintain and enhance important natural resources and to avoid irreversible changes or situations requiring costly restoration at taxpayer expense. For example, without ecologically-sensitive guidelines, ground water removals for irrigation have exceeded annual or periodic recharge and lands have subsided, causing damage to agricultural fields and physical structures.

In such "disasters" the taxpayer is called upon to restore the lands and structures through disaster relief payments. Comprehensive multidisciplinary planning and development guidelines for both objectives should be designed to avoid disruptions, damages, and restoration costs. This approach is in the best interest of all citizens.

Panelists agreed that water resource projects can have positive as well as negative environmental effects. For example, dredged materials from navigation projects have been used to create and expand fish and wildlife habitat. Positive effects can be assured and negative effects minimized through effective planning procedures and project design. In contrast, discharges of toxic substances have negative impacts, except when purposefully applied, and they should be regulated carefully.

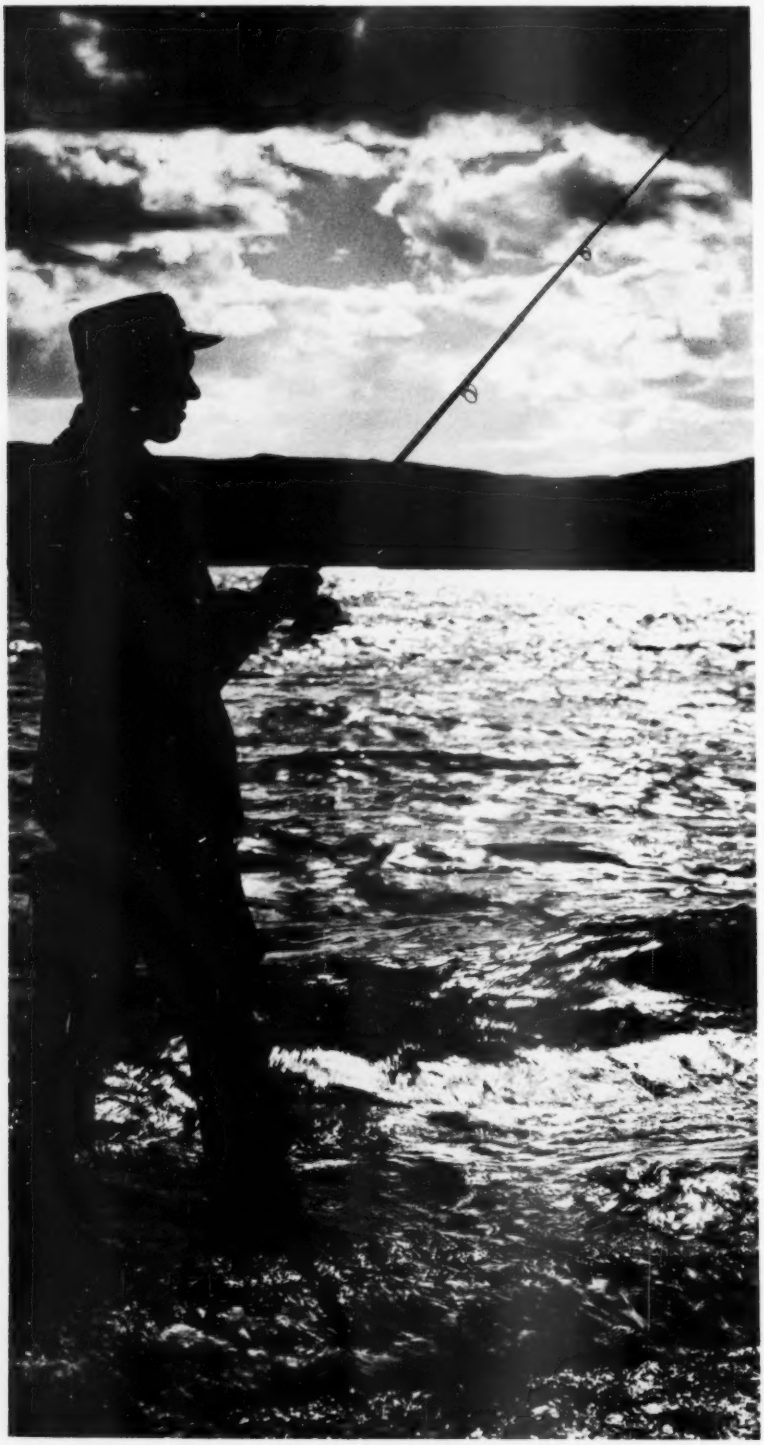
There have been some significant improvements in planning water development projects in recent years. However, some of those changes have not been implemented fully. More procedural changes are needed. The charge to the panel was not to dwell on these accomplishments, but to identify where further improvements should be made.

Increasing numbers of studies show the need to maintain important aquatic areas, minimal streamflows, and other habitats to perpetuate a variety of public values. Such areas help support the Nation's recreation industry, estimated now to be worth $105 billion annually. Agreement was reached that procedures should be realigned to maintain the Nation's important aquatic areas within the national objectives for water projects and programs. National, State, and local standards and guidelines should provide uniform recognition of those critical landscape units. This approach would complement the purposes and intents of NEPA as well as existing and pending land use policies.

It was felt that the principle of establishing National and State standards and guidelines should be applied more firmly than has been done in the past. Its application will help resolve existing inconsistencies and avoid development of additional inconsistencies in programs among Government agencies.

There was general agreement to improve quantification and expression of resource values in dollars where possible, but also to recognize that some values are beyond dollar expression. The price of resources cannot be determined in the market place. The planning principles, standards, and guidelines must encompass those values.

As employed in the past, benefit-cost calculations and ratios ignored too many public values and have contributed to costly decisions. For example, in evaluating a timbered swamp, the soils are evaluated for their potential capabilities for growing agricultural crops and benefits are estimated accordingly. Ignored are values of existing timber and other woody vegetation, flood prevention, nutrient cycling, water purification, and other valuable functions of the aquatic ecosystem. The trees and natural system which provide tertiary water treatment, as well as other



functions, are knowingly and unknowingly given zero value. Agreement was reached that this gross weakness in procedures must be corrected.

There was general agreement among panel members that Federal cost-sharing assistance, both in technical services and financial aids, should be made available on an equal basis for structural and nonstructural measures. At present, Federal assistance is provided almost exclusively for structures such as dams, levees, and channels. This is because they require less or no local cost-sharing. The situation consequently has contributed to resource degradation by steering local support to project features not always in the national interest. Biased cost-sharing policies have promoted unwise development of flood plains. They over-emphasize ecologically damaging structural solutions to flood problems. Nonstructural alternatives should be implemented promptly where appropriate.

"The panel was pleased to learn of the evaluations completed on a few Bureau of Reclamation projects and other evaluations underway on Corps of Engineers and Soil Conservation projects."

Post-construction evaluations should be planned and conducted as part of project and program investments. Full, impartial evaluations of water and associated land resource projects should be completed immediately to provide understanding on the adequacies of project plans, impacts, and the effectiveness of investments. The panel was pleased to learn of some evaluations of this general nature completed on a few Bureau of Reclamation projects and others now underway on Corps of Engineers and Soil Conservation projects. Many more well-designed studies are required.

Agencies should continue to improve and assure opportunities for public participation from the earliest stages of planning through the design and operation phases of projects. Because of increasing competing demands on many types of aquatic resources, citizens are becoming more interested in developing alternatives and want final decisions to encompass multiple values and benefits. The public has the responsibility to seek pertinent information on proposed water development projects. Likewise, agencies should provide background information to citizens on projects as the information is generated and not just before final decisions are made. Panel members agreed that procedures called for under NEPA have been valuable and overall have provided net benefits. But there is need to improve the process for preparing environmental impact statements (EIS) and to streamline their contents, thereby making them a more useful tool to assist decision makers. Many problems encountered in early stages of implementing EIS procedures are believed to be a result of misconceptions of the process, inadequate planning, inadequate assessment of potential impacts of projects, and inadequate consideration of alternatives. Some panel members believe that improved inputs into planning by project designers and citizens should overcome these weaknesses. Others believe policy covering EIS preparation and review should be amended as well.

There was broad agreement among the panelists that adequate funds are not available to conduct resource inventories and to complete impact assessments of proposed projects. Also, there are insufficient funds allotted, especially by States, to gain essential inputs by qualified scientists and resource professionals at early stages of project planning. This weakness must be corrected to enhance planning, evaluation, and implementation of sound projects.

There were comments by several panelists on what they considered to be exceedingly low discount rates associated with water development projects. They pointed out that the rates are far below those faced by private investors and, in fact, amount to a subsidy unknowingly paid by taxpayers to primary project beneficiaries. Some panelists recommended that the discount rate be established at a realistic level and be adjusted periodically to reflect the prevailing economic situation.

The "beneficiary-pay" recommendation of the National Water Commission was discussed briefly by the panel and other participants. There was general agreement on the need to identify beneficiaries of water resource developments. And there was no objection to the proposal that nonconsumptive recreational users might be assessed reasonable fees. However, a few panelists objected to the recommendation that user charges be assessed broadly, as for navigation benefits.

The panel recommends that the U.S. Water Resources Council reflect these views in the principles, standards, and guidelines for planning water–associated land resource projects. Members of the panel believe that the recommended changes will help to blend and balance diverse views on water development projects.

Water Laws, Water Rights & Institutional Arrangements

Moderator, Frank J. Trelease, Jr., Dean, College of Law, University of Wyoming

Vice Moderator, Roland Robison, Jr., Deputy Assistant Secretary for Land and Water, Department of the Interior

The objective in water law legislation is to establish a system where the limited water resources are best used to meet the needs of society. Society should determine the priorities and goals of the water policy. The law should be the vehicle for satisfying these objectives. This panel discussed many features in present water law which do not adequately meet the needs of society. While they were able to agree upon many areas of need for improved legislation, they were unable to agree on the specific changes necessary.

The most significant changes in existing water law must come from the States. This is not because the States more than the Federal Government have failed in their responsibilities, but rather, it is because the great body of water law is State property law.

Specific problems in existing State law are to a great extent a result of the piecemeal approach to water law historically taken by State and Federal legislatures. Comprehensive legislation is needed which considers all aspects of water resource management and allocation, including such matters as ground water and surface water integration, weather modification, waste management, and quality control.

The panel was able to identify a number of areas where State law should be modified to better satisfy the needs of the people in the Western States. Not every State is presently in need of legislation in each of the areas discussed. Some States have already reacted to the problem—their lead should be followed by others. Some have not yet been faced with some of the problems discussed.

"The most significant changes in existing water law must come from the States . . . because the great body of water law is State property law."

The panel generally agreed that the goal of Western State water law was to allocate the limited water available to best satisfy the needs of the people. With this general agreement on broad principle there was great divergence on how to determine the best use of the water, and on how to create a system which best satisfied this goal. Some felt that economics was the basic test of best use. Others felt that the State, through legislation, should establish policies and priorities on the use of water to satisfy the needs of society. These individuals felt that the use of water which results in the greatest economic return is not necessarily the use which best serves society.

There were a number of legislative changes suggested by those who feel the political process should determine the priorities for water use. These include the establishment of water use plans by the legislature which would:

a) encourage change of use in accordance with the State plan;
b) place time limits on the duration of water rights to enable continuing policy review and continuing changes in use without necessity of compensation;
c) use water policy planning as a tool for land use planning; and
d) allow appropriation of presently unappropriated water only in accordance with the established legislative policy.

Assistant Secretary Jack O. Horton speaks to Conference participants.

All Western States permit a change in use of water rights. However, most panelists felt that the procedures required and the administrative discretion granted to regulatory agencies inhibited the easy change of use. Whether water is allocated on the basis of economics or on the basis of a politically established water use policy, all agreed that the change from one use to another should not be inhibited. However, the panel did not discuss specific proposals to streamline the change.

One use that has been overlooked in the law is recreational. The pattern of the development of water law was such that no consideration was given to the maintenance of the stream for recreational uses, for fish and wildlife, or scenic beauty. As a result, the existing systems were unable to recognize a water right or otherwise protect the stream for these purposes. For example, in many States recreation, scenic value, fish and wildlife enhancement are not considered beneficial uses of the water. Thus, water presently devoted to such uses is subject to appropriation for economic purposes. It is believed that appropriation for such in-stream uses would not be inconsistent with the general water law schemes for the allocation of water.

There were a number of suggested methods to ensure water for in-stream uses. It was suggested that specific in-stream appropriations be made for recreation, fish and wildlife, and scenic values. This would be the easiest to administer and would most easily fit into the present legal systems. By this method the proper governmental agency would apply for a water right for previously unappropriated water in the same way as an economic appropriator. The appropriation would be for the water in the natural stream, instead of the usual diversion from the stream. This course has been followed in Idaho by special legislation for a specific stream named in the legislation.

Another area of concern to this panel was ground water quality and maintenance. A major deficiency in the law pertaining to ground water is the failure of the law to treat ground water and surface water in a manner which recognizes their relationship in nature. Conjunctive use of surface and ground water is not encouraged, resulting in waste of available surface water at the same time ground water tables are being lowered.

Additionally, the law is slow to correct reduction in quality of ground water and subsidence of the surface as the ground water is mined.

A voluntary method of ground water recharge used in Salt Lake City was described to the panel and was offered as a possible solution. In times of surplus surface water, the ground water is recharged from the city water supply. Those having rights to ground water pay the city only the cost of delivery to the point of ground water recharge. This system avoids unnecessary mining of ground water.

It was felt that the existing legal structure recognizing ground water rights and surface water rights as separate and distinct should be altered to provide for mandatory conservation techniques similar to the voluntary efforts described.

Water conservation was another topic discussed. Although water law does not permit waste, it is not designed to encourage conservation of water by those using it. The standards of waste are loose. The user who conserves water must, in many cases, return the saved water to the stream. Thus, he is not rewarded for his efforts.

Water of high quality, suitable for irrigation or domestic use, is used for purposes such as cooling or injection into the ground for secondary oil recovery when low quality water would be satisfactory.

Suggestions to alleviate this problem were:

(1) legislation tightening the definitions and standards for waste;
(2) legislation restricting the use of high quality water for uses where low quality water would be satisfactory;
(3) legislation rewarding the water saver by allowing him the use of the water saved or a percentage of it;
(4) using taxes to encourage water conservation;
(5) pricing water from State and Federal projects in a manner which encourages conservation.

Finally, the panel discussed Federal water law. Federal involvement in water law and water rights is most significantly felt in three areas: distribution of water from Federal projects, pollution control, and Federal and Indian reserved water rights.

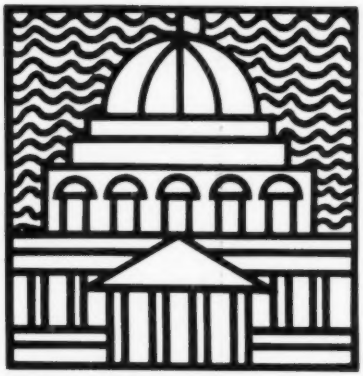
"Although water law does not permit waste, it is not designed to encourage conservation of water by those using it."

Coordination of Federal projects with the proper State agencies is necessary. This is presently done on a case-by-case basis as each project is proposed and constructed. There was some discussion on the advisability of better coordination between Federal and State interests and legislative pronouncement of Federal water allocation policy. However, it was not felt to be an area of extreme concern at this time.

The Federal Government is heavily involved in water quality through pollution abatement. The Water Pollution Control Act Amendments of 1972 give most of the authority for regulation in this field to the Environmental Protection Agency. This is an area which must be watched closely because of the potential effects upon irrigation run-off. However, it does not yet have significant impact on the allocation of water.

The most significant Federal influence on water use in the Western States is a result of the Federal reserved water and Indian reserved water. By enacting the Water Rights Act of 1866 and the Desert Land Act of 1877, and similar legislation, the Congress passed control of water on the public lands to the jurisdiction of the several States, and invited the public to appropriate and use the water in accordance with State law. At the same time the water was being appropriated by the Western settlers, the Federal Government was creating Indian reservations, military reservations and other federal reserves on the public lands. In 1907 in the case of *Winters v. United States*, the Supreme Court held that in creating an Indian reservation the Federal Government reserved water for the Indians on the reservation from appropriations under State law. This principle has been applied to all Indian reservations. In 1963, in *Arizona v. California*, the Court expanded *Winters*, holding that whenever the Federal Government created a reservation for any purpose on the public lands, it simultaneously reserved water from State appropriations sufficient to satisfy the needs of the reservation as created.

In summary, the States have the greatest responsibility in formulating water law legislation. Most of the reform, in the areas discussed, must come from the States. However, the greatest present inhibition to good water resource utilization is the uncertainty of Federal and Indian water rights, and the greatest need for immediate action is the resolution of this uncertainty.



The Role of Federal, State & Local Governments

Moderator, Richard F. Kneip, Governor of South Dakota

Vice-Moderator, Frederick O. Rouse, Chairman, Great Lakes Basin Commission

Although unanimity was not achieved on all issues, the consensus was reached that while the Federal role will tend to increase if not controlled, the State and local roles need to be strengthened and that the Federal role, except for funding, should be diminished.

In examining the role of water in national affairs, the panel members examined the relationships among Federal, State, and local governments. They felt that it is the collective policies and programs of private, local, State, and Federal Governments which will ultimately determine how well resources are managed and used to benefit all people.

There is concern that actions may be taken to structure more layers of government by creating regional planning groups with governmental authority. However, it was noted that in large metropolitan areas an integrating function is desirable to coordinate the many Federal programs striving to improve social, economic, and environmental conditions.

There was general support for user charges for beneficiaries of water resources projects. The funds from these charges may be used to reduce the cost of subsidies. There were some who were concerned that in some areas the application of user charges might distort allocations and would have to be considered for all conflicting modes.

"It is the collective policies and programs of private, local, State, and Federal Governments which will ultimately determine how well resources are managed and used."

There was an underlying thread throughout all the speakers' comments that the Federal Government was unable to exercise a strong role in decision making in local and sub-State water resources developments. In spite of numerous attempts by the Congress to legislate coordination, the Federal Government has shown an inability to determine goals and policies. Many speakers emphasized the need to place more emphasis on the State and local levels of government without increasing their tax burdens.

The trend toward urban population concentration has shifted the public interest from concerns of rural dwellers to those of urban. Yet panelists felt they must look at present and future needs for food, fiber, and energy production. The traditional large-scale multi-State-Federal projects must reevaluate the priorities in light of current political support.

A national water policy which clarifies the Federal role and its relationship to State and local governments is required. A proposal was made for dismantling the Federal intrastate water programs because of their lack of political viability.

Later in the discussion an opportunity was given participants to express their views on a number of subjects, without having to make a speech. This was done by disseminating a participation questionnaire. The results follow:

(1) There was overwhelming disapproval of continuation of the present relative roles of Federal, State, regional, and local governments.

Richard F. Kneip, Governor of South Dakota; Robert Long, Assistant Secretary, Department of Agriculture; Charles Custard, Director, Office of Environmental Affairs, H.E.W.; Warren D. Fairchild, Director, U.S. Water Resources Council, were among Conference attendees.

(2) The audience was strongly opposed to increasing the Federal role through increased funding, granting of increased authority within existing water resources purposes, or increasing the types of responsibilities of the Federal Government. More than half of those responding were in favor of decreasing the Federal role while correspondingly increasing the role of the State, regional, and local governments regarding funding, authority, and scope of activity.

A slight majority of the participants was opposed to creating new organizations or expanding the roles of existing organizations for either special purposes or comprehensive activities at the Federal, regional or local levels, but did favor such expansion at the State level.

(3) The participants were in favor of consolidating organizations at all levels of government. They recommended mandating closer coordination at all levels of government among existing organizations. Opinions on the means by which this would be achieved were not conclusive.

Other issues discussed by the panel included overwhelming support for closer coordination of all activities through every practicable means. Financing and taxing arrangements which in the long run would reallocate the ability to support water and related land resources development at lower government levels were advocated.

There was concern that revenue sharing might not achieve the same ends as do categorical grant programs because of the general lowering of the level of funding support. Block grants for resources management were offered as one means of providing adequate funding.

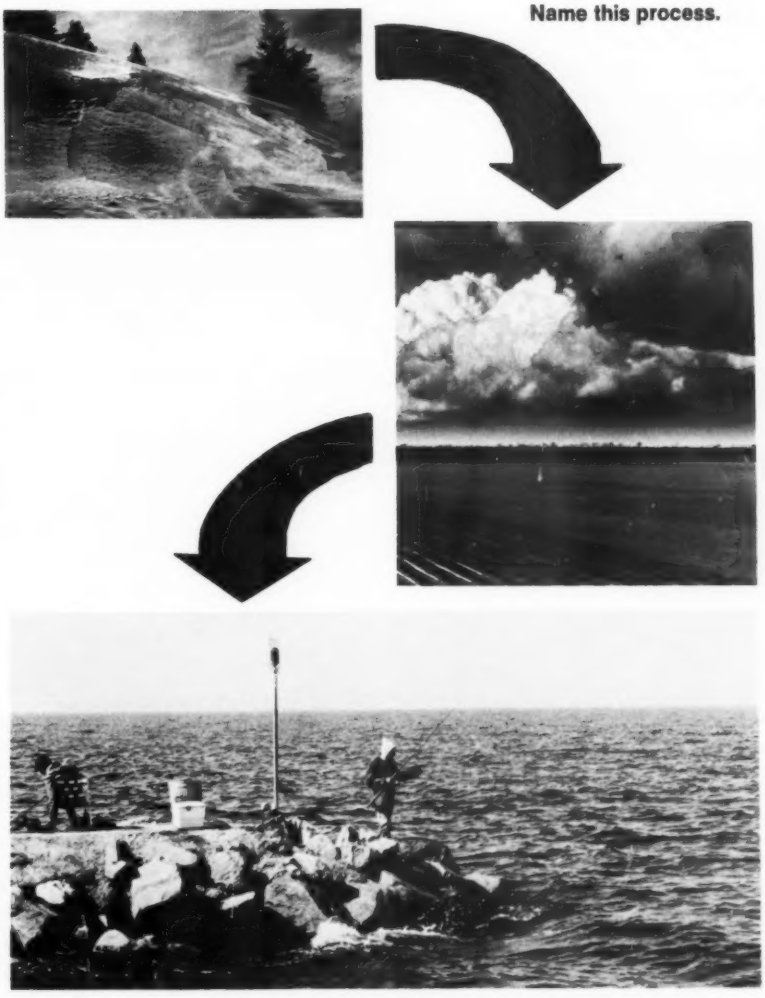
And finally, with respect to public involvement, it was felt that agencies have come a long way in recent years. Several important recent acts have required further public involvement, but the cost of public involvement in additional planning cost, project formulation delays, as compared against the consequences of improvement and selection, has not been fully evaluated.

era

Water Quiz

1. Name this process: The natural mechanism that evaporates ocean water, distributes it to every part of the earth, then returns it to the sea.
2. How much water is pumped out of the oceans every year by the above-mentioned process?
   a. 83,700 cubic miles
   b. 54,000 cubic miles
   c. 91,600 cubic miles
3. What is the "pump" of this process?
4. What is the process by which water, evaporated from the earth and given off by plants and animals, is returned to the atmosphere as vapor?
5. What is the process through which the transformation of water from a vapor to a liquid takes place, such as occurs when vapor in the atmosphere is changed to droplets of rain?

Answers on page 32.



How Page Grew

by Carol White

The area above the rim of the Colorado River's Glen Canyon on the Arizona-Utah border was a vast scenic wilderness of red Navajo sandstone. Dotted with isolated buttes and mesas, it was uninhabited except for a few ranchers on the northwest side of the river and scattered Indian families on a reservation southeast of the river.

That was 18 years ago. Today, a new community of more than 8,000 people exists near the canyon rim. This is the modern town of Page, Ariz. Located on Manson Mesa, it is two miles from the Colorado River and Glen Canyon Dam.

"The construction men with their families arrived in spite of the blowing, drifting sand, the over-100° F. summer heat, the 0° F. winter cold, and the isolation."

Unlike most other towns, this one began with a plan and a purpose.

In the spring of 1956 Congress authorized Glen Canyon Dam, a principal feature of the Bureau of Reclamation's Colorado River Storage project. This gigantic dam was to be 710 feet high, only 16 feet lower than the famed Hoover Dam, but much larger in concrete volume. To build the massive dam and accompanying powerplant and bridge, the Bureau and its contractors would need people—lots of people, all kinds of people.

Carol White is the Editor of the *Washington Report*, Office of Public Affairs, Bureau of Reclamation, Washington, D.C.

And they came. The construction men with their families arrived in spite of the blowing, drifting sand; the over-100°F. summer heat; the 0°F. winter cold; and the isolation.

But the isolation would disappear. Page emerged in July 1957 in the form of a newly erected 16x14-foot prefabricated metal shack. The shack served as a telephone communications center hooked up to Kanab, Utah —about 70 miles away as the crow flies, but nearly 170 miles away over the existing roads. At first no road at all reached the northwest rim of the canyon, and even after a crude road was bladed, the distance from one canyon rim to the other was almost 250 miles.

The nearest railhead was 135 miles away in Flagstaff, Ariz.

Although these distances were shortened gradually by new access roads, a bridge across the canyon remained a critical need during the first two and a half years of construction.

The first bridge built was not the steel-arch bridge that now spans the Colorado River at Glen Canyon Dam (U.S. Highway 89). It was a pedestrian-only, temporary, wire mesh walkway with a steel-cable handhold on each side. Anyone with enough courage to cross this 6-foot wide bridge could look right through the wire mesh and see the Colorado River 700 feet below.

"She was dared to drive her small car across the 6-foot-wide wire mesh walkway."

The story is told in Page about the bridge, and the wife of a project engineer. It seems she was dared to drive her small car across the 6-foot-wide wire mesh walkway. She accepted the dare. Some say the car was a Jeep; others insist it was a Volkswagen. Whatever the make of car, she did it. And there are those still living in Page who swear they saw her do it.

The first business district in the new town of Page, Ariz.

On February 20, 1959, the steel-arch Glen Canyon Bridge was opened for public use, eliminating both the need for the wire mesh walkway and the necessity for the 250-mile drive from one canyon rim to the other. The bridge completed a new routing for U.S. Highway 89 and opened a shorter route between Page, Ariz., and Kanab, Utah—a distance of about 76 miles.

Glen Canyon Bridge is the highest steel arch in the world and the second longest in the United States. In 1964, the American Society of Civil Engineers voted Glen Canyon Dam, Powerplant, and Bridge "The Outstanding Civil Engineering Achievement of 1963."

According to the proposed plan, the town became a designed community governed by the Bureau of Reclamation. The late John C. Page, after whom the town is named, was Commissioner of Reclamation from 1937 to 1943. He also pioneered much of the Colorado River Reclamation development.

Little by little, living conditions improved. The first business established in Page was a branch of the Bank of Arizona, now the First National Bank of Arizona. Huge monthly paychecks were deposited there. The pay for construction work on the dam was good because the work was dangerous.

"In 1964, the American Society of Civil Engineers voted Glen Canyon Dam, Powerplant, and Bridge "The Outstanding Civil Engineering Achievement of 1963."

A grocery store and post office were also established. Trailer parks were laid out, and the Bureau built 200 government homes situated along curving paved roads.

By 1958, a permanent airfield had been built, suitable for use by small commercial planes,and a 25-bed hospital was ready for use by the residents of Page. A paved road linked the modern pioneer town directly with Flagstaff.

During the first year, children went to school by correspondence. The second year, three prefabricated steel buildings were erected to serve as classrooms and one student was graduated from high school. On Sundays, the school buildings served as churches.

In 1959, a volunteer fire department was established. The department included a fulltime chief and 15 volunteers—all Reclamation employees. The equipment consisted of two pumper firetrucks—one of 1941 vintage and the other of 1945. The available equipment also included a 500-gallon water tank on a trailer and a direct chemical unit.

In July 1959 near disaster overtook the fledgling town. Some of the original residents remember it vividly as "The Strike." In fact, it almost destroyed the town.

Page, before and after construction of Glen Canyon Dam.

John C. Page

John C. Page, Commissioner of Reclamation from January 1937 to June 1943, was the man after whom Page, Ariz. is named. He began his 36 years of service with the Bureau as a topographer, and later worked as supervisor of the Grand Valley project, and as chief administrative assistant in the construction of Boulder Dam. Page became Director of the Bureau's Engineering Division under Commissioner Elwood Mead, and finally was appointed Commissioner by President Franklin D. Roosevelt.

As Commissioner, Page oversaw the construction of Grand Coulee Dam, the principal dam of the Columbia Basin project, which at the time of its construction was called "the eighth wonder of the world."

While Page was Commissioner, authorization for the Missouri Basin project was obtained. This project would eventually entail the construction of 100 dams.

Page was an adamant believer in the purpose of the Bureau of Reclamation—to provide new and better homes where American families could earn for themselves an American standard of living.

He also believed the Bureau should strengthen the agricultural foundation for the civilization that was growing so rapidly in the West.

Page saw water as the most valuable natural resource in the West with land a close second, and he believed that to accomplish its purpose, the Bureau needed to unite the arable land in the West with the scarce, but vital resource water. Page sought a policy of conservative and judicious use of these two natural resources, believing it necessary to conserve them in anticipation of the needs of future generations.

Page, a strong proponent of Federal Reclamation, believed a dam should be useful—that it should bring a full measure of benefits to mankind including harnessing water to provide a source of power, employment, irrigation, flood protection, and other economic and social benefits.

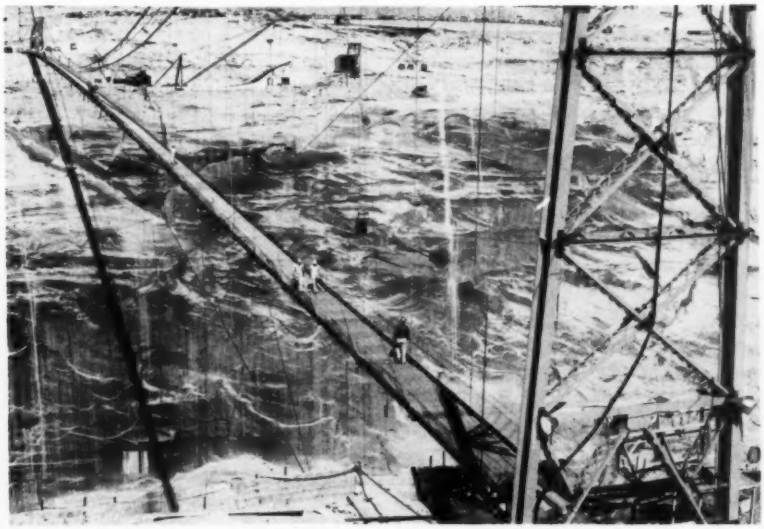
During his career, Page served on the National Resources Committee and the President's Great Plains Drought Area Committee.

He was born October 12, 1887, in Syracuse, Neb., and graduated from the University of Nebraska with a B.S. in civil engineering. He continued his studies for 18 months at Cornell University, specializing in hydraulics and civil engineering. Page was a member of the American Society of Civil Engineers.

After retiring from the position of Commissioner, he was retained by the Bureau as a full-time engineering consultant, where he served until 1947.

Page died in 1955.

The 6-foot-wide wire mesh walkway, 1958.



For six months the strike dragged on. One by one, the construction workers and their families pulled out in search of jobs elsewhere. Some businessmen were forced to close their businesses, and others just sat in front of their empty stores.

On December 24, 1959, an agreement between management and labor was reached and the remaining Page residents celebrated a joyous Christmas.

On June 17, 1960, the first bucket of concrete was poured.

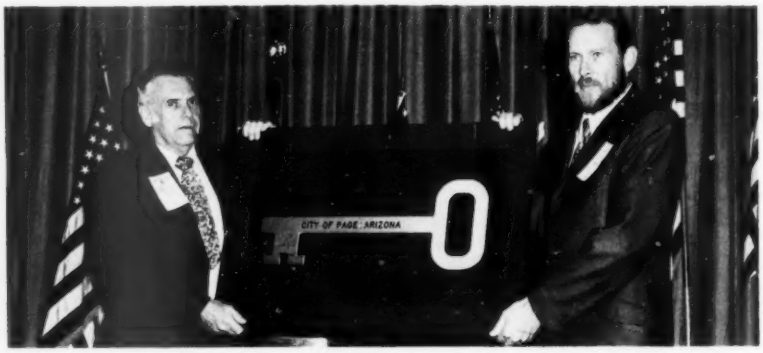
With the construction of the dam in progress, Page grew to a population of 6,000. In September 1963, Glen Canyon Dam was topped out and finished within the next few months.

Following completion of the major construction on the powerplant in 1964, the population dropped to 3,000. And, three years later it dwindled to 1,322. Page would continue to exist, however, if only because a few Government workers would always be required to be there to maintain the dam and powerplant.

And so Page settled down to a quiet existence, beside the yet undiscovered tourist haven, Lake Powell.

In 1967 a study to determine the possibility of incorporating the city was undertaken by Arizona State University under contract by the Bureau of Reclamation. At the end of December 1967, the report was made public.

The study noted three important elements: (1) the Bureau of Reclamation intended eventually to incorporate Page under Arizona law. (2) Although the Bureau administered the city government, all of the businesses and some of the residences were privately owned. (3) The town was fast becoming a tourist center.



Commissioner Stamm presents the key to the city to Page's first mayor, Norm Martindale.

The University recommended procedures and a time schedule for transfer of the city government.

About the same time that Arizona State University's report became public, a deposit of high-quality coal was discovered on Black Mesa, 70 miles southeast of Page. Thus began the Navajo Power project.

Construction of the power station began in 1970 and Page once again became a construction boom town, as well as a tourist mecca.

In 1974 one unit of the Navajo Generating Plant began producing power. A second unit was placed on the line early in 1975, while a third is scheduled for operation in 1976. At present the population of Page is about 8,300 residents.

From 1964 to 1975, the Advisory Council guided Page. It consisted of six members—five elected by the citizens and one appointed to represent the Bureau of Reclamation. The Council was formed to be a liaison between the Bureau and the citizens of Page, to administer community affairs, and to work toward incorporation.

There are two legal requirements under Arizona law for incorporation of an area. The first is that the area must possess a population of at least 500 people. The second is that the area proposed for incorporation must be a "community." A "community" is defined as "a locality in which a body of people reside in more or less proximity, having common interests in such services as public health, public protection, fire protection, and water which bind together the people of the area and where the people are acquainted and mingle in business, social, educational, and recreational activities." The county board of supervisors determines if a "community" exists.

There are two methods to incorporate an area. One requires a petition to the county board of supervisors signed by two-thirds of real property taxpayers living within the "community".

The second method requires that 10 percent of the real property taxpayers living within the area proposed for incorporation should petition the board of supervisors for an election on the question of incorporation.

The residents of Page used the second method of incorporation.

Elections on incorporation may be held only on the fourth Tuesday after the next State general election. Once the election has been called, only real property taxpayers who are qualified electors of the State and live within the area proposed for incorporation may vote in the election.

A special election for incorporation of Page by the Coconino County Board of Supervisors was held December 17, 1974. The results were 2-to-1 in favor of incorporation.

The Coconino County Board of Supervisors recognized the legitimacy of the community on March 1, 1975, by declaring Page incorporated. The Advisory Council was sworn in as a temporary seven-member "Common Council," to represent the citizens until an election could be held. This election was set for May 1975, with a runoff (if necessary) in June.

Saturday, March 22, 1975, was a day of celebration. A ceremony was held to help people realize the significance of their giant step toward incorporation. On that day, however, a huge frontal storm swept down across the Sierras and through the deserts, kicking up winds of over 60 miles per hour and depositing snow in its wake. As the violent wind hurled sand and dust through the streets of Page, old-timers were reminded of the early days when the raw soil for new lawns was strewn into the path of savage spring winds.

In spite of the storm, the March 22 ceremony went off as scheduled, minus a few dignitaries whose planes were grounded in Salt Lake City or Phoenix. A capacity crowd of 600 filed into the sparkling new high school where the auditorium was decorated with a forest of flags.

Commissioner of Reclamation Gilbert G. Stamm was able to fly in from Denver to speak. He presented Page Mayor, Norman Martindale, a framed stainless steel key to the city. In addition, he presented a copy of the Bureau's contract with the city that officially turned over considerable city land, utilities, hospital, airport, and items of equipment.

Delighting the audience were several musical numbers by the band and chorus of Page High School. The show stopper, however, was the appearance of Navajo children from nearby Kaibeto School, who sang short, happy, Indian chants to the beat of a tom-tom. Dressed in traditional Navajo clothing, these bright-faced seven and eight-year olds, each wore some valuable item of family jewelry.

"The show stopper was Navajo children who sang short, happy, Indian chants to the beat of a tom-tom."

Since it borders the Navajo Indian Reservation, Page could almost count among its citizens the many nearby Navajos who shop in the town and who use the hospital and the schools. For these Indian families, the existence of Page has effected a tremendous change in life styles, in economic status, and in personal expectations.

In fact, Page initially was on the Navajo Indian Reservation. But in 1958, land for the town was obtained under the Navajo Land Exchange Act, whereby the Indians were given equivalent land elsewhere.

Also participating in the ceremony was Mildred Page, widow of the late Commissioner John C. Page, for whom the town was named. Mrs. Page—a spry, active octogenarian—marched up the aisle bearing the new town flag. Then with a strong voice she spoke of her delight in being present for the important occasion.

Stan Jones, master of ceremonies and president of the Page-Lake Powell Chamber of Commerce, summed it up when he said, "A new infant was born this week: the town of Page. It may stumble a bit but it will soon learn to walk with strength and vigor toward the goal of self-determination."

Children from the Kaibeto Indian School sang to the beat of a tom-tom.

E&R Center Helps Denver Paddle Its Canoe

by Jim Joslyn

Bobbing and swirling in the rapids, the two-man canoe lurches out of control, bangs into the east side of the channel, and caroms downstream heading into the churning white water once more.

Seconds later, a kayak jumps from the entry gate, slithers into a curling wave, and twists its way towards the slalom course. The August sun has driven spectators to the cooling shadows of the trees that line the grassy banks. Cameras click.

A summer afternoon on an exciting white water stretch of one of Colorado's many famous rivers? Wrong!

The operational model of the chute made its debut in February 1975, at the E&R Center.

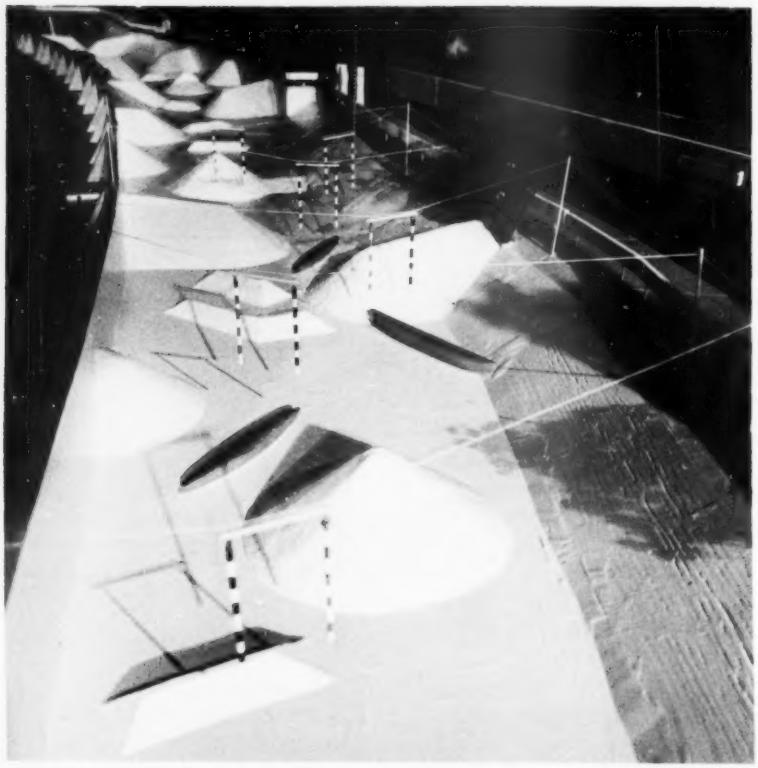
We're inside Reclamation's Engineering and Research Center laboratories in Denver where a hand-built scale model of the Nation's first artificial white water kayak and canoe chute is making its debut. It's all part of Denver's multimillion dollar South Platte River Development project, a program to clean up and beautify the river where it bisects the Denver metropolitan area. The chute, one of the early features of this project, is scheduled to be constructed during September and October of 1975—almost in the heart of downtown Denver.

"A summer afternoon on an exciting white water stretch of one of Colorado's many famous rivers? Wrong!"

The city made arrangements with the Division of General Research at the E&R Center to use its model testing facility which is part of one of the most complete water resources engineering and research laboratories in the world.

And without the voluntary efforts of Bill Simmons, Tom Logan, Dick Simonds, and Rich Brown, all E&R Center staff members, the chute probably would have been relegated to the archives of forgotten ideas. These four, kayakers themselves,

Jim Joslyn is an Editor-Writer, Technical Services and Publications Branch, Division of Engineering Support, E&R Center, Denver.



"Berms" in kayak and canoe chutes generate waves and eddies producing white water.

This 1:20 scale model of the chute was made and tested by volunteers on off- duty hours.

contributed countless off-duty hours during the design, construction, and testing of the model, which began in October 1974 and was completed in February 1975.

The 1:20 scale model is authentic in every respect. The K1 kayaks (for one paddler), a C2 canoe (an enclosed canoe for two paddlers), and the 3½-inch-high wooden spectators were hand-carved by Simmons and Brown. Built-in obstructions in the chute, called "berms," generated waves and eddies—together producing white water.

When the chute is actually used, the eddies will allow kayakers and canoeists to paddle back up the course without leaving the water, an important feature allowing full enjoyment of the chute. The model was equipped with slalom gates, provisions for which will also be included in the South Platte chute.

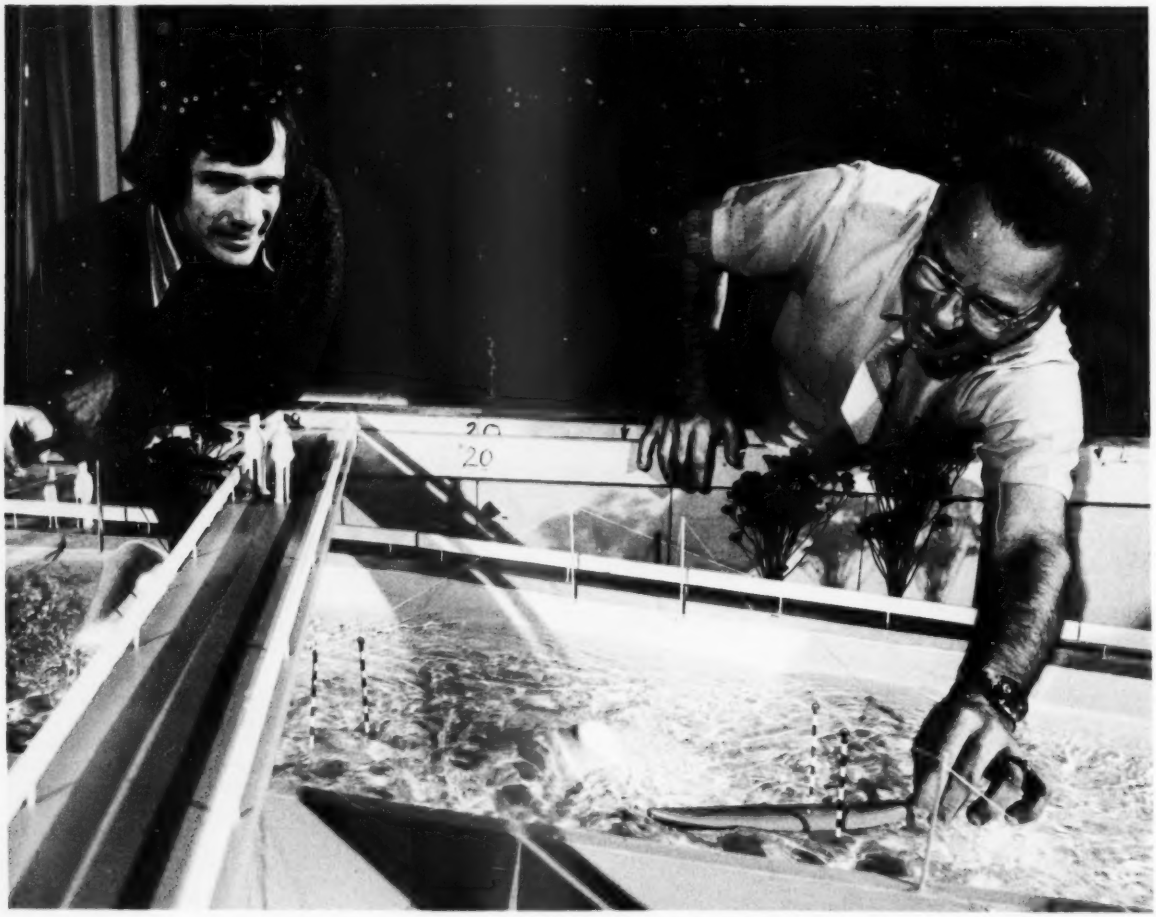
Because no artificial chute had ever been built in the U.S., the designers studied plans of the course built for the 1972 Olympic games in Augsberg, Germany, and of the proposed championship course in England. The only costs for the model were for the few necessary construction materials.

"The designers studied plans of the course built for the 1972 Olympic games in Augsberg, Germany, and of the proposed championship course in England."

When completed, the South Platte white water chute will drop 5 feet during its 500-foot run. The width will range from 25 to 40 feet and the depth from 30 to 64 inches. Classified a type III run, it will be capable of producing 4 feet of head at the gates with an additional 5 feet of drop in the course itself, for a total head of 9 feet. The water flows will reach a maximum 325 cubic feet per second and velocities will hit a high of 14 feet per second.

The chute, estimated to cost $200,000, will be largely cast-in-place concrete that will form the flat bottom, the berms, and the sloping channel walls. Vertical walls will be steel sheet piling with concrete facing.

The South Platte River, site of the nation's first artificial white water chute. The chute is scheduled to be constructed in the fall of 1975.



Ron Mason, architect and nationally ranked kayaker and Bill Simmons, Reclamation hydraulic expert, scoot a model kayak through a slalom gate.

Geared as a recreational facility for all levels of kayakers, rafters, canoeists, and innertubers, this public course has no holes, ledges, or dropoffs that might trap a person or boat. The warmer months of April through October are expected to produce the heaviest periods of use in these manmade rapids. But sufficient water permitting, hardy paddlers will be allowed to brave both the shivering chill of the weather and the water during winter.

So, from the jostling enthusiasm of the kids on their huge truck tubes to the serious practice of experienced kayak competitors, the South Platte River's manmade white water will offer bumpy thrills to all who take a ride.

"The South Platte River's manmade white water will offer bumpy thrills to all who take a ride."

And for those who prefer to keep their feet dry, the park-like setting of the river's banks with its hiking and bicycle paths, trees, and soft grass will be a tangible slice of that "quality of life" for which Denver is famous.

News Notes

"&?!;"

George Stapleton to Denver

George Stapleton has been appointed Regional Public Affairs Officer for the Lower Missouri Region in Denver.

He is a Federal career employee of 18 years. Before coming to the Bureau of Reclamation, he had been with the Soil Conservation Service.

In 1973 Stapleton started his Reclamation career at the E&R Center. He then transferred to the Upper Missouri Region as Regional Information Officer.

Lewandowski Named Chief of Engineering Support

Edward Lewandowski has been named Chief of the Division of Engineering Support in the Office of Design and Construction at the Engineering and Research Center in Denver. His appointment became effective March 10.

Since 1970 he had been Regional Engineer for the Mid-Pacific Region headquartered in Sacramento. A 26-year career employee of the Bureau of Reclamation, Lewandowski has a B.S. degree in civil engineering from Michigan State University and is a registered professional engineer in Colorado.

As a member of the American Society of Civil Engineers (ASCE), Lewandowski is on one national ASCE committee and has chaired a local ASCE committee in Sacramento. He is also a member of the United States Committee on Large Dams and is an affiliate of the Association of Engineering Geologists.

Klostermeyer Named Assistant Chief

William C. Klostermeyer has been named Assistant Chief, Division of Program Coordination and Finance, in the Washington office.

Klostermeyer has 18 years of Federal service, all with the Bureau of Reclamation. He started as a student trainee (rotation civil engineer) at Grand Island, Nebr. In 1968 he transferred to the Washington Office to the Division of Water and Land. In 1969 he moved to the Division of Planning where he was chief of the planning policies branch.

News Notes continued.

Jack W. Hilf Retires

Dr. Jack W. Hilf, Chief, Division of Design at the E&R Center in Denver, retired May 1 after 34 years of Federal service.

He spent 28 years with the Bureau of Reclamation, starting in 1946 in Denver as a specialist in earth dam design and soil mechanics.

During his 28-year career with the Bureau, Dr. Hilf earned numerous awards, including the Department of the Interior Distinguished Service Award, the Thomas Fitch Rowland Prize from the American Society of Civil Engineers and several Department of the Interior Special Achievement Awards.

Just before his retirement from the Bureau, the University of Colorado College of Engineering and Applied Science presented Dr. Hilf its Distinguished Engineering Alumnus Award, the highest honor with which the College recognizes an alumnus.

Barrett Selected for Interior Fellows Program

Clifford I. Barrett, Chief, Division of Water and Land, has been selected to participate in the Department of the Interior Fellows Program.

The Interior Fellows Program identifies outstanding employees and provides opportunities for developmental training.

Barrett began his career with the Bureau of Reclamation in 1956 as a rotation engineer in the Denver Office of Design and Construction, after graduation from the University of Denver in 1954 and a two-year tour of duty with the U.S. Army. In 1958 he was assigned to the Concrete Dams Branch in Denver, and in 1959 transferred to Sacramento as a hydraulic engineer.

He was promoted to general engineer, Office of Program Coordination, Sacramento, in 1960. In 1964, he came to Washington, D.C., as a program specialist in the Economics and Statistics Branch, where he served until 1968 when he was made special projects officer in the Division of Water and Land.

Barrett has a B.S. degree in civil engineering from the University of Denver.

Bob Zeeck Named UM Information Officer

Robert McCann Zeeck has been appointed Regional Information Officer for the Upper Missouri Region, with headquarters in Billings, Mont.

Using the professional name "Bob McCann," Zeeck has been associated with KBMY-Radio (Billings), KGHL-Radio-TV (Billings), KMYC-Radio (Marysville, Calif.), and KULR-TV (Billings).

In October 1969 Zeeck was public affairs consultant for the Peace Corps in Washington, D.C., and in 1970 became Special Assistant for Environmental Quality and Regional Coordinator, Office of Public Affairs in the Federal Aviation Administration, Washington, D.C.

In 1973 he became a private public affairs consultant.

In March 1975 Zeeck joined the Bureau of Reclamation as Regional Information Officer.

Answers to Water Quiz

1. Hydrologic Cycle
2. a. 83,700 cubic miles
3. Sun
4. Evapotranspiration
5. Condensation

U. S. GOVERNMENT PRINTING OFFICE : 1975 O - 589-747

Letters to the Editor

Dear Editor:

With the forthcoming Bicentennial — which also marks on June 17 of 1976 the beginning of the 75th year of Reclamation— we have a great opportunity to initiate something like a Reclamation Historical Association. A principal purpose of an association could be to preserve and tell interesting events during Reclamation's development.

If others feel, as I do, that such an association could serve these and other useful purposes, I would appreciate receiving letters with comments and ideas toward this end.

Not only presently employed Bureau of Reclamation employees (associated for social and related reasons) but especially retirees and friends of Reclamation, as in construction operations and power and irrigation advancements, could be members. The association could stand beside the Bureau of Reclamation for the preservation of photos, journals, letters, and other memorabilia (now in the hands of family) and it could also collect oral histories on tape.

Time is of the essence if full advantage is to be taken of the great store of information and interesting stories now preserved in the memories of old Reclamationists.

Sincerely,
Kermit K. Young

Editor's note: K. K. Young, former Chief of the Division of Engineering in Washington, D.C., retired in 1973 after more than 39 years of service. Those who wish to help organize a Reclamation Historical Association should write him at his home: 3609 North John Marshall Drive, Arlington, VA 22207.

Dear Editor:

I just wanted to tell you how much I enjoyed the article on the ERTS program in the Autumn issue of *Era*. I am in high school right now, but would like to become an engineer and work on a program similar to the ERTS program. I think it is very important that the Bureau of Reclamation keep doing this kind of research.

Thank You,
Sharon Volkic
Denver, Colo.

Dear Ms. Volkic,

It is essential that young people like yourself continue to be interested in engineering and in the programs of the Bureau of Reclamation. Keep studying and good luck.

—Editor

Dear Editor:

I'm writing in reference to question number 3 of the Water Quiz in the Autumn 1974 issue of *Reclamation Era*. The question reads, "What part did water play in the invention of the 365-day calendar." Your answer was "The Egyptians invented the 365-day calendar, based on the flooding of the Nile River." It probably depends upon the source you used, but the *American Peoples Encyclopedia* states that "The most exact and complex of early calendars was that of the ancient Egyptians, a calendar believed to date from 4241 B.C. It was based on observations of the 'helical rising' of Sirius (or Sothis, the Dog Star), the brightest star in the sky.

—D. S. Craighton Jr.

Dear Mr. Creighton:

Even the best of historians will disagree. Our source is the *New Standard Encyclopedia* (publishers: Standard Educational Corp.), 1969. Thank you for a different theory.

—Editor

UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Reclamation
Washington, D.C. 20240

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR
INT-420

U.S.MAIL

R 1

RERA XEROX300XB
XEROX UNIV MICROFILMS
SERIALS DEPT
300 N ZEEB RD
ANN ARBOR MI 48106

WATER FOR TOMORROW

Specialists discuss problems and solutions of water conservation and development.

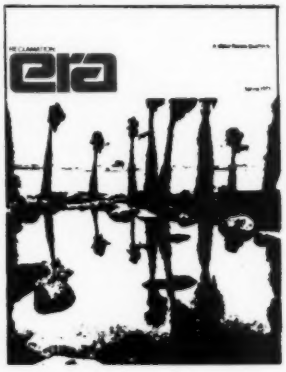
Subscribe now!

$4.00 per year

($1.00 additional for foreign mailing)

Read about the multipurpose uses of Reclamation's projects. Learn how Reclamation's dams, reservoirs, canals have benefited our Nation.

The Bureau of Reclamation opens its waters to such activities as:
• *Municipal and industrial uses* • *Fish and wildlife preservation* • *Natural resource conservation* • *Recreation* • *Flood control* • *Power generation*



Issued quarterly, the RECLAMATION ERA is the official publication of the Bureau of Reclamation, U.S. Department of the Interior.

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO *RECLAMATION ERA* for one year
@ $ 4.00 Add $ 1.00 for foreign mailing. No additional postage is required for mailing within the United States.

Send Subscription to:

NAME - FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No_____

MAIL ORDER FORM TO:
Superintendent of Documents,
Government Printing Office,
Washington, D.C. 20402